

## CLAIMS

We claim:

- [c1]        1. A method in a computer system of restricting access to memory, the method comprising:  
                  setting a memory location to indicate a trap should occur when the memory location is accessed;  
                  under control of a restricted portion of a computer program,  
                  setting a pointer to point to the memory location that indicates that traps to the pointed to memory location are enabled; and  
                  accessing the memory location using the set pointer so that a trap occurs and access to the restricted memory location is detected; and  
                  under control of an unrestricted portion of a computer program,  
                  setting a pointer to point to the memory location that indicates that traps to the pointed to memory location are disabled; and  
                  accessing the memory location using the set pointer so that a trap does not occur and access to the restricted memory location is allowed.
- [c2]        2. The method of claim 1 wherein a user program typically accesses memory locations using pointers with traps enabled.
- [c3]        3. The method of claim 1 including setting all memory locations of a data structure to indicate a trap should occur when the memory locations are accessed.

- [c4]        4.        The method of claim 1 wherein when the memory location is accessed, invoking a trap handler.
- [c5]        5.        A system for restricting access to memory, the system comprising:  
means for, under control of a computer program, indicating that a trap should occur when a memory location is accessed;  
means for, under control of a restricted portion of the computer program, setting a pointer to a memory location wherein the pointer has an indication of trap handling;  
means for accessing the memory location; and  
means for handling a trap wherein propriety of the access is detected.
- [c6]        6.        The system of claim 5 wherein the indication of trap handling is enabled.
- [c7]        7.        The system of claim 5 wherein the indication of trap handling is disabled.
- [c8]        8.        The method of claim 5 wherein the propriety is unauthorized.
- [c9]        9.        The method of claim 5 wherein the propriety is authorized.
- [c10]       10.      A computer-readable medium for restricting access to memory, comprising:  
a data structure with a plurality of elements;  
a pointer to an element in the data structure, the pointer having an indication of whether a trap is enabled depending on whether a restricted or unrestricted portion of a computer program is accessing the data structure;  
for each element, an indication of whether a trap is enabled; and  
a handler including instructions for handling the enabled trap.
- [c11]       11.      The computer-readable medium of claim 10 wherein the indication for an element is enabled.

- [c12]        12. The computer-readable medium of claim 10 wherein the handler is invoked when the element in the data structure is accessed through a pointer whose indication is enabled.
- [c13]        13. The computer-readable medium of claim 10 wherein the handler is not invoked when the element in the data structure is accessed through a pointer whose indication is disabled.
- [c14]        14. The computer-readable medium of claim 13 wherein the indication for an element is disabled.
- [c15]        15. The computer-readable medium of claim 13 wherein the handler is invoked when the element in the data structure is accessed through a pointer whose indication is enabled.
- [c16]        16. A system for restricting access to memory comprising:  
a component that sets a memory location to indicate a trap should occur when the memory location is accessed;  
a component that, under control of a restricted portion of a computer program,  
sets a pointer to point to the memory location that indicates that traps to the pointed to memory location are enabled; and  
accesses the memory location using the set pointer so that a trap occurs and access to the restricted memory location is detected; and  
a component that, under control of an unrestricted portion of a computer program,  
sets a pointer to point to the memory location that indicates that traps to the pointed to memory location are disabled; and  
accesses the memory location using the set pointer so that a trap does not occur and access to the restricted memory location is allowed.

[c17]        17.      The system of claim 16 wherein a user program typically accesses memory locations using pointers with traps enabled.

[c18]        18.      The system of claim 16 including a component that sets all memory locations of a data structure to indicate a trap should occur when the memory locations are accessed.

[c19]        19.      The system of claim 16 wherein when the memory location is accessed, a trap handler is invoked.